

Attachment "A"  
(Specification Amendments)

**Please amend the paragraph bridging page 17, line 6 - page 18, line 3, as follows:**

a' Basically, the content of the document refers to all information contained in the document at the time of signing (i.e. applying an e-seal to the document), including layout and format. For a document with multiple signers, the content is defined as content with respect to a particular signer. A first example is where the contract is signed by two parties. In a first round, both parties sign a plain document, being one of two copies of a contract. The contract content is the content of the document. In a second round, each party signs the other document that is already signed by the other party. In this case, the content of the document includes the signature the other party. Fig. 2 shows a second example illustrating the idea of content definition with respect to a particular signer of the document using a three signer example. A document 200 containing initial content 222 is initiated and signed by a first person, and sent to a second person. The second person signs the document and sends it to a third person. For the first person, the content 222 of the document 200 seen is the whole information contained in the original document, shown as box 222. When the second person signs the document 200, the document content 220 with respect to that person should include the content 222 of the original document 200, the first person's signature 224 and the second person's addition 226 (such as comments) to the document. To the third person, the content 230 of the document 200 includes the original document 222, the signatures of the first person 224 [[224)]] and second person 234, addition to the document by the second person 226 and the third person 236. The third person signs the document with a further signature 244. Note that, the

signature of the person is implemented as e-seal. This can be formally written as:

a'

$$C_n = \sum_{i=1}^n (S_{i-1} + \delta_i) + C_0$$

where  $C_n$  is the content of the document at the time of signing by the  $n^{\text{th}}$  person,  $S_{i-1}$  is the signature of the previous signer, the first signing person has a sequence number of 0, and  $\delta_i$  is the addition to the document by  $i^{\text{th}}$  signing person.

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Please amend the paragraph bridging page 31, line 25 - page 32, line 6, as follows:

Q2  
There are three levels of verification for a printed document. As shown in Fig. 8, the verification starts with a printed document 734 to be verified, together with certain information about the document contained in a file of the document 544. The difference in verification of the electronic and paper document ~~[[644]]~~ 544, 734 is that the paper document 734 can be verified by visual inspection, and the paper document 734 has to be scanned to convert it to digital form before the paper document can be verified the same way as electronic document 544. The first level of verification is the visual inspection of the e-seals by module 810, the second level verification is the verification of the optically sensible component by module 820. The verification device again can be a simple optical device, such as a special lens or an ordinary photocopier. After photocopying, certain patterns should become visible/invisible on the optical sensible component. This pattern is invisible/visible within usual viewing distance on the original printed copy 734. The verification process can stop at module 810 or 820 if the verification result is "OK" and the level of verification is acceptable.

Please amend the paragraph at page 32, lines 19-24, as follows:

a<sup>3</sup> After watermark extraction 840 with the keys, the original digest of the content is recorded and compared with the digest extracted from the content of the paper document by module 850. The verification is successful if there is no difference or the difference does not exceed a threshold providing a positive verification result 854. ~~{PLEASE CONFIRM IF OBJECT 854 SHOULD BE LABELLED "VERIFICATION RESULT."}~~

Please amend the paragraph bridging page 34, line 29 - page 35, line 11, as follows:

a4  
Firstly, an owner 920 requests an electronic degree certificate through the service center 910 with the indicated issuer 930 and the following steps are performed:

- 1) An owner 920 logons to the webpage of the service center 910, gets registered if not yet already done, and fills in a request form.
- 2) The service center 910 communicates with the issuer 930 about the request and arranges business links between the service center 910 and the issuer 930 if not yet already done.
- 3) The issuer 930 connects to the service center 910, issues an electronic degree certificate for that owner 920, and sends the certificate to the owner [[910]] 920 through the service center 910.
- 4) The service center 910 keeps a record of the certificate, which is collected during the issuing process and is enough for the verification service.
- 5) The owner 920 can choose to either keep the e-certificate, or rent a secure deposit box to keep the certificates in the service center 910.

Please ~~amend~~ the paragraph at page 36, lines 16-23, as follows:

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Q5 Fifthly, the service center 910 receives a request to print a hard copy of an electronic document either from an owner [[910]] 920 or another party.

- 1) The user should registers with the service center 910.
  - 2) The user logs into the webpage of the service center 910 and sends in the electronic document.
  - 3) The service center 910 performs verification on the electronic document, assigns a trust level to the document, and prints a copy together with the center's e-seal and a dedicated optical sensitive component.
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Please amend the paragraph at page 37, lines 5-12, as follows:

At In the sixth process, the service center 910 need only keep a record of the document that is necessary for verification services. The record is created and the data is collected when the document is signed using the services provided by the service center 910. That is, the service center 910 does not keep a copy of the whole document. By doing so, the authority of the issuer [[920]] 930 is well respected, and the privacy of the owner is protected. When a user chooses to rent a deposit box in the service center 910, the deposit box is protected by the user. The service center 910 does not have any right to access the content of the deposit box.